

REMARKS

Applicants propose incorporating the recitations of claims 17 into claim 1.

This change should raise no substantial issues insofar as the recitations of claim 17 have presumably already been examined in combination with the recitations of claim 1. Accordingly, no substantial new issues of patentability should be raised by this change and therefore entry of the change is deemed proper. Claims 1-16 will be pending upon entry of this amendment.

The final Office Action includes a rejection of claims 1-17 under 35 U.S.C. §103 as allegedly being unpatentable over the *Zhang et al.* Patent Application Publication (US 2003/0010971) in view of the *Tsakalakos et al.* Patent Application Publication (US 2004/0077156). This rejection continues to be traversed.

The undersigned wishes to apologize for not be sufficiently clear as to the arguments being presented with respect to the combination of the *Zhang et al.* and *Tsakalakos et al.* Patent Application Publications. It is respectfully submitted that the prior art lacks sufficient motivation for the combination, as further explained below.

The *Zhang et al.* Patent Application Publication describes a method of forming a vertical nano-scale electronic device and, with specific reference to relied upon Figures 5a-5f, this electronic device is a vertical stack of quantum dots 90a/90b. Specifically, the method includes growing an n-type AlGaAs layer on an underlying compound semiconductor (GaAs) substrate 80. A silicon dioxide layer 96 is then formed, to be followed by a aluminum metal layer 84. The aluminum metal layer 84 undergoes a repeated anodization process to form an anodized aluminum oxide (AAO) layer 86 having a regular array of nanopores 88. The silicon dioxide layer 96

is then selectively etched to result in the transfer of the nanopores 88 in the AAO layer 86 into the underlying silicon dioxide layer 96.

What is markedly different about the *Zhang et al.* process compared to the present invention is that a vertical stack of InGaAs/GaAs quantum dots is selectively grown in the transferred array of nanopores 98. These are also called nano pillars. It should be noted in particular that the vertical stack of quantum dots comprises the vertical nano-scale electronic device. Nothing akin to this is disclosed in the present application and, more importantly, the present application is directed to a method of manufacturing a semiconductor device wherein the semiconductor layer is present in the mask layer having the nanoholes is regrown "until said mask layer is covered by said second semiconductor layer." It is respectfully noted that these recitations, which previously appeared in dependent claim 17, were not addressed in the Office Action. Claim 1 is proposed to be amended to include these recitations since this language clearly separates the present invention from the applied art.

For instance, even if one were to assume, *arguendo*, that the Office is correct in suggesting that the *Tsakalakos et al.* Published Patent Application teaches growing GaN based semiconductor layer in nanoholes, there would be no motivation to completely abandon the purpose of the *Zhang et al.* system of producing a vertical nanoscale electronic device with a GaN layer as grown until the GaN defective buffer mask is fully covered as suggested in the Office Action. It is axiomatic that a *prima facie* case of obviousness is not established if the intended purpose or function of either the primary of the secondary reference, or both, is destroyed by their combination. See, e.g., In re Gordon, 733F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

It is respectfully submitted that the applied art neither teaches nor suggests any motivation that would result in the abandonment of *Zhang's* primary function of forming a nanoscale electronic and/or optical device using the techniques of a nano channel template as disclosed therein. It is also noted that the motivation suggested at page 4 of the Office Action of the advantages of a GaN over GaAs would not suggest such a radical modification and abandonment of purpose of the *Zhang et al.* patent that is necessary to have the methods of the *Zhang et al.* patent be modified in the manner that would meet the present claim recitations.

It is noted that the present amendment is presented after final. While it is assumed that the above changes to the claims will be made insofar as they present no new issues, it is further noted that Applicants continue to reserve the right to present affidavits, if necessary, establishing an earlier date of invention. The present application claims priority to Korean Application 2003-4106 filed 21 January 2003 whereas the *Tsakalagos et al.* Patent Application Publication was filed 18 October 2002 and thereby may be eliminated by the filing of a suitable declaration. The *Zhang et al.* patent may also be within reach with its filing date of 24 June 2002 particularly if it is not entitled to the priority date of 25 June 2001 or 26 June 2001. The issue of whether these references actually constitute prior art has not yet been explored by the undersigned.

In light of the foregoing, Applicants respectfully request reconsideration and allowance of the above-captioned application. Should any residual issues exist, the Examiner is invited to contact the undersigned at the number listed below.

Respectfully submitted,

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